

Investor Day

December 3, 2020

Remarks by Timothy O'Shaughnessy

Chief Executive Officer

Graham Holdings Company



GRAHAM HOLDINGS COMPANY – INVESTOR DAY

December 3, 2020



Welcome to the Graham Holdings Investor Day, something new we are trying out in 2020. We wanted to provide an additional opportunity outside of the annual meeting to update you on how we view the business and allow you to ask questions to help you better understand our Company. Thanks to all who have joined today, as well as to those who submitted questions in advance.

DISCLAIMER

These presentations at this meeting contain certain forward-looking statements that are based largely on the Company's current expectations. All public statements made by the Company and its representatives that are not statements of historical fact, including certain statements in this presentation, the Company's Annual Report on Form 10-K, its Current Reports on Forms 8-K, the Company's 2019 Annual Report to Stockholders, and the Forms 10-Q for the first, second and third quarter are "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995.

Forward-looking statements are subject to certain risks and uncertainties that could cause actual results and achievements to differ materially from those expressed in the forward-looking statements. Actual results may differ materially from those projected as a result of certain risks and uncertainties, including but not limited to the duration and severity of the COVID-19 pandemic and its effects on the Company's operations, financial results, liquidity and cash flows. Other forward-looking statements include comments about expectations related to acquisitions or dispositions or related business activities, including the TOSA, the Company's business strategies and objectives, anticipated results of license renewal applications, the prospects for growth in the Company's various business operations and the Company's future financial performance. As with any projection or forecast, forward-looking statements are subject to various risks and uncertainties that could cause actual results or events to differ materially from those anticipated in such statements. Accordingly, undue reliance should not be placed on any forward-looking statement made by or on behalf of the Company. The Company assumes no obligation to update any forward-looking statement after the date on which such statement is made, even if new information subsequently becomes available.

For more information about these forward-looking statements and related risks, please refer to the section titled "Forward-Looking Statements" in Part 1 of the Company's Annual Report on Form 10-K, the Company's Current Reports on Forms 8-K, and its Forms 10-Q for the first, second and third quarter and the section titled "Corporate Governance/Risk Factors" under "Investor Relations" on the Company's website, www.ghco.com.

TODAY'S PRESENTERS



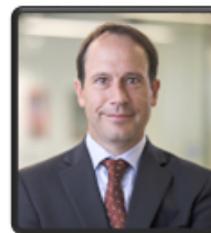
TIMOTHY O'SHAUGHNESSY
CHIEF EXECUTIVE OFFICER
GRAHAM HOLDINGS COMPANY



ANDY S. ROSEN
CHIEF EXECUTIVE OFFICER
KAPLAN, INC.



EMILY L. BARR
CHIEF EXECUTIVE OFFICER
GRAHAM MEDIA GROUP



JAKE MAAS
SVP-PLANNING AND DEVELOPMENT
GRAHAM HOLDINGS COMPANY

We have a set of presentations that several members of the senior management team and I will walk you through. I will kick things off and then you will hear from Andy Rosen, the CEO of Kaplan, Emily Barr, the CEO of Graham Media Group, and Jake Maas, our SVP of Planning and Development, who will cover our manufacturing businesses.

GRAHAM HOLDINGS FINANCIAL RESULTS

\$ in millions

	Q1 2020	Q2 2020	Q3 2020	Q3 '20 YTD	Q3 '19 YTD	% Change
Education	\$356	\$333	\$302	\$992	\$1,098	(10%)
Television broadcasting	115	101	134	350	340	3%
Manufacturing	113	83	107	303	342	(11%)
Healthcare	46	49	51	147	119	23%
Other Businesses	101	87	123	311	271	15%
Eliminations	(0)	(0)	(1)	(1)	(0)	N/A
Total Revenues	\$732	\$653	\$717	\$2,102	\$2,169	(3%)

	Q1 2020	Q2 2020	Q3 2020	Q3 '20 YTD	Q3 '19 YTD	% Change
Education	\$9	\$27	\$10	\$45	\$56	(20%)
Television broadcasting	37	25	54	116	121	(4%)
Manufacturing	14	6	12	31	34	(10%)
Healthcare	4	10	9	24	11	N/A
Other Businesses	(17)	(22)	(15)	(55)	(28)	(93%)
Corporate and Other	(9)	(13)	(13)	(34)	(39)	13%
Adjusted Operating Income (Loss)*	\$39	\$32	\$56	\$127	\$155	(18%)

GH GRAHAM HOLDINGS

* Non-GAAP measure – see reconciliation at ghco.com
Note: the sum of certain amounts may not equal the total due to rounding

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I'd like to begin with a summary of Graham Holdings through Q3 2020. I could use words or phrases like “unprecedented” or “enormous challenges” or “switched to remote relatively smoothly”, but it is likely you've already heard those stories from other businesses. All are equally the case for GHC, but they are unlikely to provide you with any truly helpful information.

So I'd like to call out a few other words that help describe our year:

“Pivotal”: Several large capital allocation decisions, paired with accelerated digital transformations at Kaplan, set the stage for value creation over the coming years.

“Inspiring”: Our small corporate team punched way above its weight in 2020. Members of the team have never worked longer hours, for lower compensation,

to drive results that we've never been prouder of – odd, since we would have considered these results disappointing on January 1.

Suffice it to say, I could not be more proud to work with the business leaders at Graham Holdings, and I appreciate our managers for what they've done to keep our businesses healthy and prosperous in 2020.

Let's move to our financial results. Through Q3, our revenue is down 3% from 2019 and our adjusted operating income is down 18% to \$127 million. The business performed very well in the early months of the year before the sudden onset of tremendous pressure related to COVID-19. After bottoming out in April and May, in aggregate our businesses have made a slow and steady recovery. We have several operations still acutely financially impacted by COVID, and a host of others operating in a recessionary stance.

OPERATING AND FREE CASH FLOW

\$ in millions

	Q3 '20 YTD	Q3 '19 YTD	% Change
Net Cash Provided by Operating Activities (GAAP)	\$241	\$72	N/A

	Q1 2020	Q2 2020	Q3 2020	Q3 '20 YTD	Q3 '19 YTD	% Change
Operating Income	\$8	\$6	\$40	\$54	\$114	(53%)
Add: Depreciation	17	23	18	58	43	36%
Add: Amortization	14	14	14	43	40	8%
Add: Impairments	16	12	2	30	1	N/A
Add: Pension Expense ¹	6	6	5	17	15	11%
Operating Cash Flow²	\$61	\$60	\$80	\$202	\$213	(5%)
Less: Capital Expenditures	(21)	(15)	(17)	(52)	(73)	29%
Free Cash Flow²	\$41	\$45	\$63	\$149	\$140	7%

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¹ Operating portion of pension expense

² Non-GAAP measure

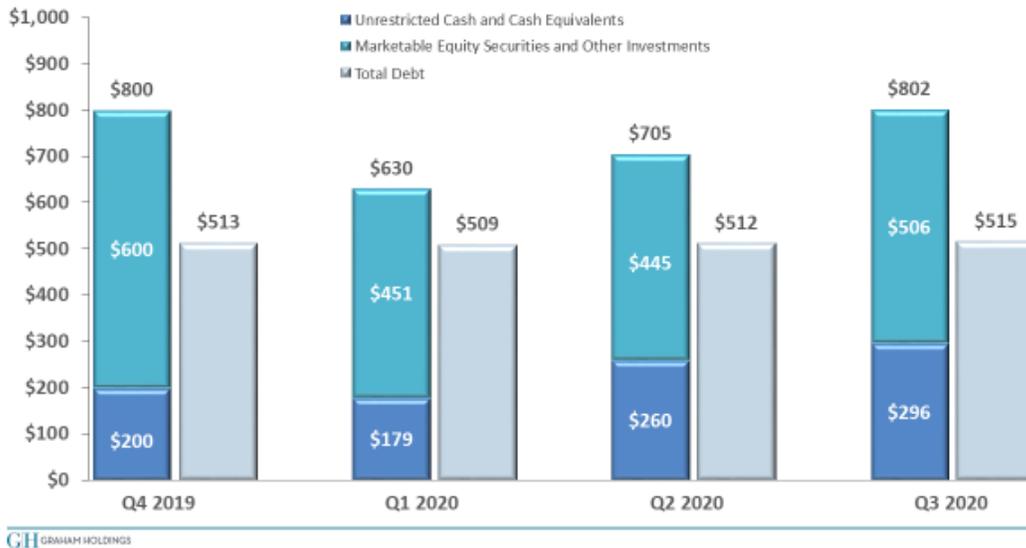
Note: the sum of certain amounts may not equal the total due to rounding

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Nevertheless, the Company's net cash from operating activities through Q3 was \$241 million, up from \$72 million in 2019.

LIQUIDITY TREND

\$ in millions



As of Q3, our cash and marketable securities totaled \$802 million against \$515 million of debt. We remain somewhat guarded about what the future holds, but believe in 2020 we have protected our underlying earning power and possess a balance sheet that allows us to pursue future opportunities.

Graham Media Group had a tremendous recovery as political spending in Q3 and into Q4 drove results far better than we could have hoped. Kaplan's transition to a digital first business accelerated and we began to see strong growth at Kaplan Higher Education. You'll hear more about both of those things in detail from Emily and Andy shortly.

GRAHAM HEALTHCARE GROUP

\$ in millions



CONSOLIDATED UNITS

	Q1 2020	Q2 2020	Q3 2020	Q3 '20 YTD	Q3 '19 YTD	% Change
Total Revenues	\$46	\$49	\$51	\$147	\$119	23%
Operating Expenses ¹	42	39	42	123	108	(14%)
Adjusted Operating Income²	4	10	9	24	11	117%
Less: Amortization, Impairments	1	1	1	3	5	27%
Operating Income	\$3	\$9	\$8	\$20	\$6	N/A

JOINT VENTURES

	Q1 2020	Q2 2020	Q3 2020	Q3 '20 YTD	Q3 '19 YTD	% Change
Equity in Earnings of Affiliates	\$2	\$4	\$3	\$8	\$3	176%

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¹ Excludes amortization and impairment of goodwill and other long-lived assets
Note: the sum of certain amounts may not equal the total due to rounding

² Non-GAAP measure

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We do not have a feature presentation today from Graham Healthcare Group; however, I do want to take a moment to speak about our results, because of their importance to Graham Holdings. If you haven't familiarized yourself with Graham Healthcare Group, you should.

At its core Graham Healthcare Group provides in-home nursing care in the fields of home health, hospice, and infusion services. They do this in a few ways and GAAP accounting doesn't always make it easy to connect the dots, so we'll do so here.

We have several healthcare businesses, operating primarily in Michigan, Pennsylvania, Illinois and Texas. These show up in the healthcare segment of our financial statements and through Q3, those operations generated \$147 million in revenue and \$24 million in adjusted operating income. We also have

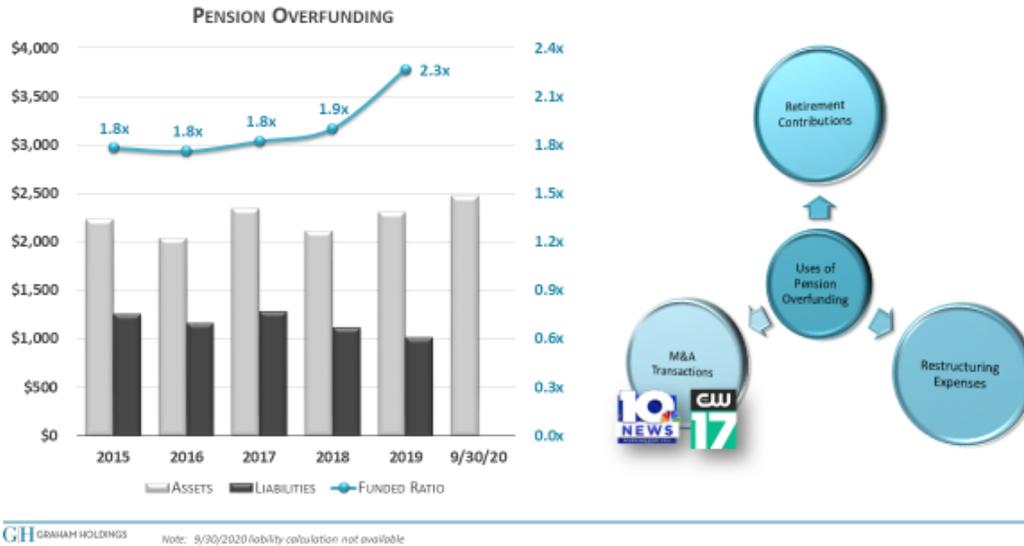
five joint ventures with hospitals and other healthcare providers in these areas where we own less than 50% of these entities and manage the operations. Our share of these earnings is very real, but show up within our equity method investments line of the income statement. Through Q3, our earnings from these health care joint ventures were \$8 million. Overall, including these joint ventures, GHG managed businesses that generated \$241 million in revenue through Q3 of 2020.

Our co-CEOs, David Curtis and Justin DeWitte, have done a wonderful job of improving the performance of our operations on almost every dimension, from quality of care to financial results, despite the pandemic. COVID-19 has brought a unique set of challenges to our healthcare business, which includes significant PPE expense to keep staff and patients safe. With more than five hundred of the patients we care for testing positive for COVID-19; and, roughly 10% of our home health and hospice workforce having missed time mostly due to quarantine for potential exposure, the staff at GHG has been exceptional at continuing to provide care to vulnerable and home bound patients.

We are proud of the team at GHG and pleased with the improved results. We remain optimistic about our ability to continue to grow this business over the long term.

PENSION UPDATE

\$ in millions



Outside of operations, our pension plan continues to be very well funded. As of September 30, our pension plan had assets of \$2.5 billion, a balance which continues to far outweigh our obligations.

The pension is valuable to the Company in several ways. First and foremost, the plan is designed to provide a benefit to current and former employees of the Company. It also provides a valuable and increasingly rare defined benefit that can generally reach about 8% of annual salary. In addition, the overfunded status of our pension plan is a very valuable feature of our financial statements. It allows us to:

- 1) Provide generous pension benefits in lieu of a higher 401k match. Each incremental point of 401k match for pension plan participants could cost the Company approximately \$3 million in negative cash flow annually.

2) On those occasions when it becomes necessary to reduce staff, the pension plan enables us, in some circumstances, to provide enhanced payments to transitioning employees, providing a helpful benefit in a difficult time. Over the past 6 years, these benefits to employees have averaged about \$4.4 million annually, including \$14 million in 2020.

3) In an acquisition, we may be able to assume pension liabilities of the acquired company as part of a transaction. We most recently did this with our acquisition of two television stations in 2017. The capacity to support employees of an acquired company through the assumption of pension liabilities uniquely positions GHC to succeed in a competitive M&A landscape. We remain optimistic that over time we may find additional opportunities along these lines again.

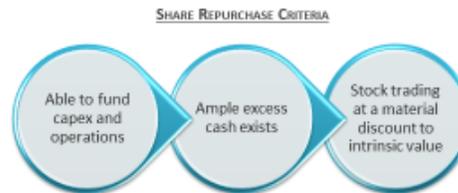
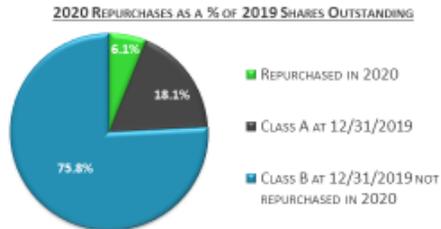
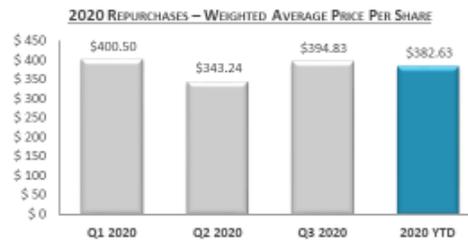
We continue to actively explore additional ways the overfunded pension can be helpful to Graham Holdings and will keep you posted along the way.

Our two major capital allocation decisions to date in 2020 have been a substantial repurchase of shares and the pending sale of Megaphone.

SHARES REPURCHASED

YTD as of 9/30/2020

\$ in millions, except per share values



Through Q3, the Company spent \$123 million repurchasing approximately 6% of the total outstanding shares at an average price of \$383 per share. As a reminder, unlike many companies, we do not have a program that repurchases a specified number or dollar amount of shares. In both my and Don's tenures, we have gone many quarters or years where we did not repurchase any shares. We have also had times when we've repurchased several percent of the Company within a single quarter. 2020 is one of those years.

We repurchase our shares when several criteria are met: 1) we feel confident we are able to fully fund any CapEx and operating needs from our businesses; 2) we have ample dry powder to opportunistically act should any compelling opportunities arise; and, 3) we believe the stock is trading at a material discount to intrinsic value. We've thought this true through much of 2020.

All three of these items are judgment calls and we will take a conservative view when assessing each bucket. We'd rather miss out on repurchasing a few shares than place the Company at risk or not be able to pursue an opportunity that makes sense for the Company. However, when these conditions are met, as we believe they have been in 2020, we think repurchasing shares is a wonderful thing for our shareholders.



Key Deal Highlights

- \$235 million cash purchase price
- Estimated \$45 million pre-tax capital invested since inception
- Estimated \$215 - \$220 million pre-tax gain, excluding working capital

I'd like to provide some color on our other major capital allocation decision so far in 2020, our announced sale of Megaphone to Spotify for \$235 million, relative to both our logic and financial returns.

We started Megaphone within Slate in 2015, and we owe thanks to Slate for being an early launching platform for the business. As it became clear that the future of the business and the opportunity was in technology as opposed to content, Megaphone moved out of Slate and became a self-contained unit of Graham Holdings, funded 100% by GHC. The company became a market leader in both advertising and podcast publishing technology that much of the industry has come to rely on. While we continue to be bullish on the future of Megaphone, we are also realistic that the next phase of the company's growth may be better served with a different owner that can provide it more scale. We view the \$235 million purchase price as a fair price for the business and an excellent return on

our cumulate invested capital of approximately \$45 million on a pre-tax basis.

We expect to report a pre-tax gain in the range of \$215 to \$220 million at closing, excluding working capital and subject to regulatory approval.

INTERNAL START-UP RATIONALE

- Costs and barriers of starting a new business have decreased
- Ascertaining product market fit and effective business models for early-stage technology companies
- Internal funding may provide tax benefits
- Modest bets that have the potential to produce outsized returns

Now, I'd like to explain our logic of why we fund new businesses within Graham Holdings. As the costs and barriers of starting a new business have decreased over the past several decades, in our view, the risk/reward has correspondingly changed. We believe we have a core competency of working with early stage technology companies, particularly those that are in related or adjacent markets to our existing businesses, to ascertain product market fit and effective business models and will, over time, create substantial value at Graham Holdings with a subset of these operations. We view them as relatively modest bets that have the ability to produce outsized returns.

All things being equal, we would rather fund an organic initiative, due to tax-advantages. An internally funded initiative is funded with pre-tax dollars and reduces our taxable income by the amount of the funding; an external investment is funded with after-tax dollars. Said another way, our dollars go further with

internal investments, even if they reduce reported income in a way external investments would not.

OTHER BUSINESSES

Megaphone sale pending



In a few moments, other business leaders will do a deeper dive on our broadcast, education and manufacturing businesses; but, before we go there, I'd like to provide some insight into our "Other Businesses", which includes the aforementioned Megaphone as well as a host of other small to mid-sized operations. A question I've received regularly is, "Why does GHC own these businesses?" Much of the world thinks in terms of verticalized industries; we do not. We make our decisions based on a set of horizontal principles, which I regularly reference in our annual letter. More directly, we own these businesses because we feel they will provide good cash on cash returns and grow intrinsic value per share for our shareholders.

- Operate in industries with track records of industry profitability
- Operate in fragmented industries
- Historically profitable, or in the case of Framebridge, have profitable unit economics
- Strong management teams

WE BELIEVE TECHNOLOGY IMPLEMENTATION IN THESE INDUSTRIES COULD LEAD TO SUPERIOR LONG-TERM RETURNS. WE ARE ACTIVELY PURSUING STRATEGIES AND INVESTING IN TECHNOLOGY THAT CREATES OMNI-CHANNEL EXPERIENCES AND DRIVES MORE SCALE.

I want to highlight a subset of these businesses that are in very different sectors, but have similar key characteristics and potential future growth opportunities.

Since January 2019, we have acquired several auto dealerships, Clyde's Restaurant Group, and Framebridge. One might reasonably ask, "What do these businesses have in common?" It may not be obvious at the outset, but let me explain how we view them. They all:

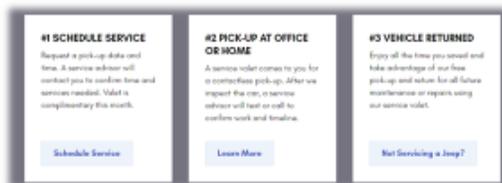
- operate in industries with track records of industry profitability,
- operate in very fragmented industries,
- historically have been consistently profitable, or in the case of Framebridge, have profitable unit economics; and,
- have very, very strong management teams.

In each of these sectors, we think underlying technology trends will create winners and losers that result in aggregation of market share and superior long-term economics to those who gain that share. At Clyde's, the dealerships and Framebridge, we are pursuing strategies and investing in technology that create omni-channel experiences, drive more scale and position us for superior long-term outcomes.

Here are a few specific examples.

AUTOMOTIVE

- Working on an improved dealership experience
 - A customer doesn't have to choose between service, convenience and price
- New Jeep Dealership has been built from the ground up under this model
 - Positive initial signs with potential to replicate model
- Launched CarCareToGo, a marketplace for automotive service



At our automotive dealerships, we have focused on building the dealership that caters to the future needs of our customers, where they come to a dealership only if they want to; where a customer doesn't have to choose between service, convenience and price; where a dealership footprint area isn't just your immediate geographic area - because technology can cover distances quite a bit better than people can.

Our new Jeep Dealership, located in Bethesda, MD has been built from the ground up under this model. Customers can come to the dealership in person or set up a video call; cars can be delivered for test-drives to your door or you can have a non-commissioned representative sit next to you and explain the vehicle; and, paperwork can largely be completed online. With this improved experience, a customer could test-drive multiple cars and complete a purchase without ever going to the dealership, if they so choose. So far the signs are good. We have

quickly built up market share in the area and currently harbor a 4.8/5 rating from Google Reviews. As we continue to hone our formula, we will look to apply this model elsewhere.

Also on the automotive front, we have launched CarCareToGo.com, a marketplace for automotive service. While early, we aim to create a one-stop shop for service needs via a valet model that does not require the customer to ever go to a service center. The vehicle is picked up and returned once the service has been completed.

CLYDE'S RESTAURANT GROUP

- Using software to improve productivity, per-item profitability and menu mix
- Focused on providing a great dining experience on-location, via takeout and delivery
- Launched three new brands under the “ghost kitchen” concept

SINCE • DISTRICT • 2020
MELTHOUSE



At Clyde's, we are employing technology in a few key ways. First in our operations, we are using software that helps our teams improve productivity, per-item profitability and menu mix, improving the overall margin profile of the business.

Second, we believe consumer preference for takeout and delivery, while accelerated by the pandemic, is here to stay and will be something the most successful restaurants will do extraordinarily well (even in non-pandemic times). We also believe restaurants that become omni-channel and focus on providing a great dining experience on location and via delivery will have superior economic returns. Clyde's Restaurant Group is leaning heavily into this strategy. We have been able to use our importance in the DC market to work with delivery apps to create mutually beneficial relationships. More recently, we launched three new brands under the “ghost kitchen” concept, where we create a new brand and

menu, but operate it as a delivery only business out of our existing kitchens. We are optimistic these new concepts will drive high-margin, incremental business to Clyde's.

FRAMEBRIDGE

- Using technology to attempt to disrupt this legacy industry
- Scale economics may create a very attractive business
- Planning to invest heavily in Framebridge in 2021



Framebridge is the third business that fits this mold. Jake will provide a more detailed overview in the manufacturing presentation, but we believe Framebridge can consolidate this legacy industry to become the way America frames. By taking framing into the 21st century with both digital and retail offerings, we believe scale economics will create a very attractive business. Our data indicates that we should put the pedal down on Framebridge in 2021 and we plan to do so.



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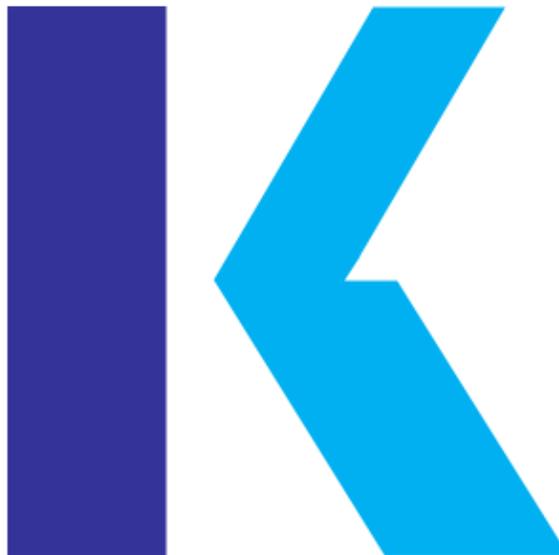
Applying a technology layer to existing industries has resulted in a tremendous amount of value creation for those leading the charge. We believe Graham Holdings is a great place to drive this change in framing, automotive and restaurants because our patience in seeking long-term opportunities and capacity for re-investment is unique relative to the competition in these industries. We may not get all of these right, but we view these opportunities as excellent risk and reward trade-offs.

At this time, I'd like to turn the mic over to Andy Rosen, the CEO of Kaplan. It's been a year of tremendous change at Kaplan, and he is eager to walk you through it. Andy?

**Investor Day
December 3, 2020
Remarks by Andrew S. Rosen
Chief Executive Officer
Kaplan, Inc.**

Kaplan

Presenter: Andy Rosen



Thanks, Tim.

2020 has played out in as unexpected a way for Kaplan as it did for everyone else, and we took some significant hits from the pandemic. But COVID also pushed the education marketplace in our direction. We've been a pioneer and leader in online education for over 20 years, and when all programs suddenly shifted online, it turns out students were attracted to institutions that know what they're doing. We may be the global education brand that's most widely known for practical, high-quality, fairly priced programs, and that's exactly where the market is moving. And at a time when students are increasingly seeking work-readiness skills with their academics, that's another area right in our wheelhouse. Most importantly, we went above and beyond to take care of our students and partners in a difficult year for everyone; if anything, our brand has been enhanced by the quality of our response to the pandemic, and our academic outcomes have remained strong. We took some important strategic steps over the course of the year that we believe will notably improve our earning power in the years ahead. So despite the specific challenges of this year, we feel good about where we are.

Let me start, as I did in May, by reminding you of Kaplan's four Priority Areas:

**Student
Success in
School**



**Success in
Careers**



**Student
Success in
School**

- AP
- PSAT
- ACT
- LSAT
- GRE
- TUTORING
- ENGLISH
- SPANISH
- STUDY ABROAD
- College Guidance
- CIMA
- CFP
- CAIA
- ACA
- CIMA
- USMLA
- SERIES 6,7,24,63
- DATA SCIENCE
- REAL ESTATE
- BAR
- GED
- SAT
- MCAT
- GMAT
- TOEFL
- FRENCH
- GERMAN
- CFA
- CFFP
- AAT
- ACCA
- CIPFA
- NCLEX

**Success in
Careers**



1. We help students qualify for, access and succeed in school -- from high school through graduate and professional school.

We have programs that serve students starting in middle and high school (some in partnership with top universities), as well as test prep courses to get into college, grad school and beyond, and programs to help students succeed while they're in school.

2. We help students and working professionals qualify for and succeed in jobs.

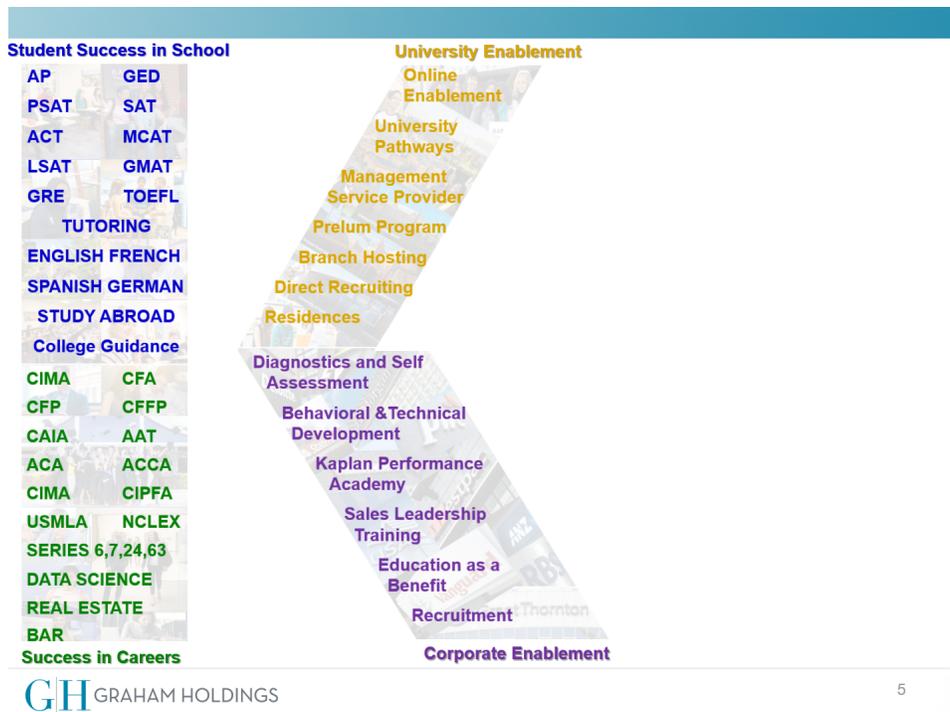
Kaplan prepares hundreds of thousands of lawyers, doctors, nurses, accountants, business leaders, engineers and other professionals around the globe through a range of offerings.

3. We provide services for universities, helping them to attract and serve qualified students, and to ensure they're successful and ready for work.

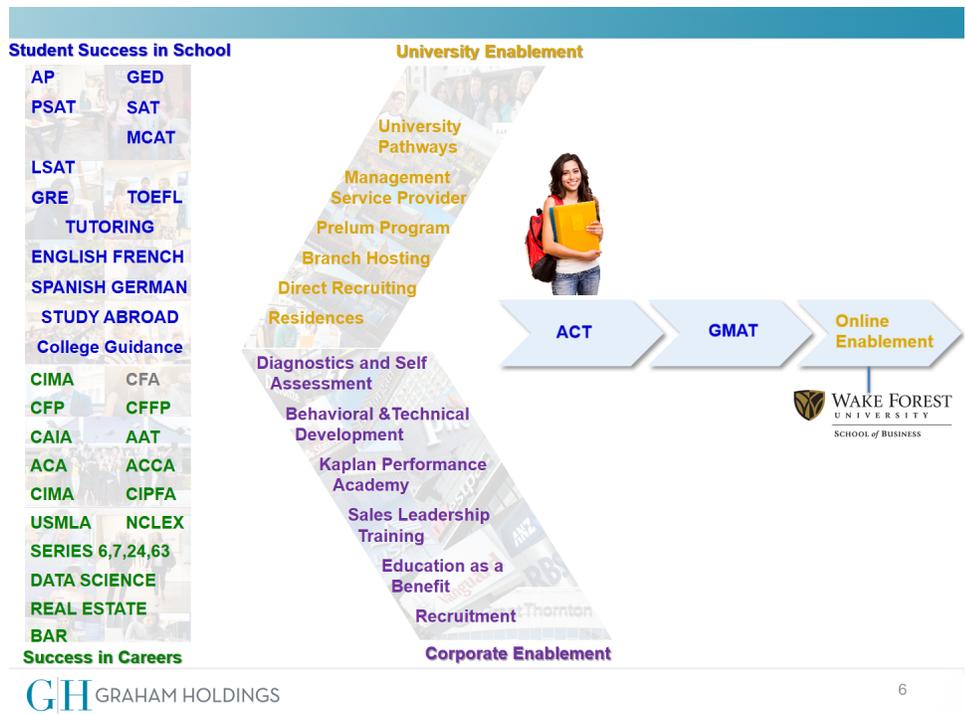
We help our partner universities identify and recruit students from around the world, we host their international campuses, we enable their online programs, and we help them prepare their students for careers.

4. We help companies identify and employ highly qualified candidates, and ensure employees are equipped to succeed.

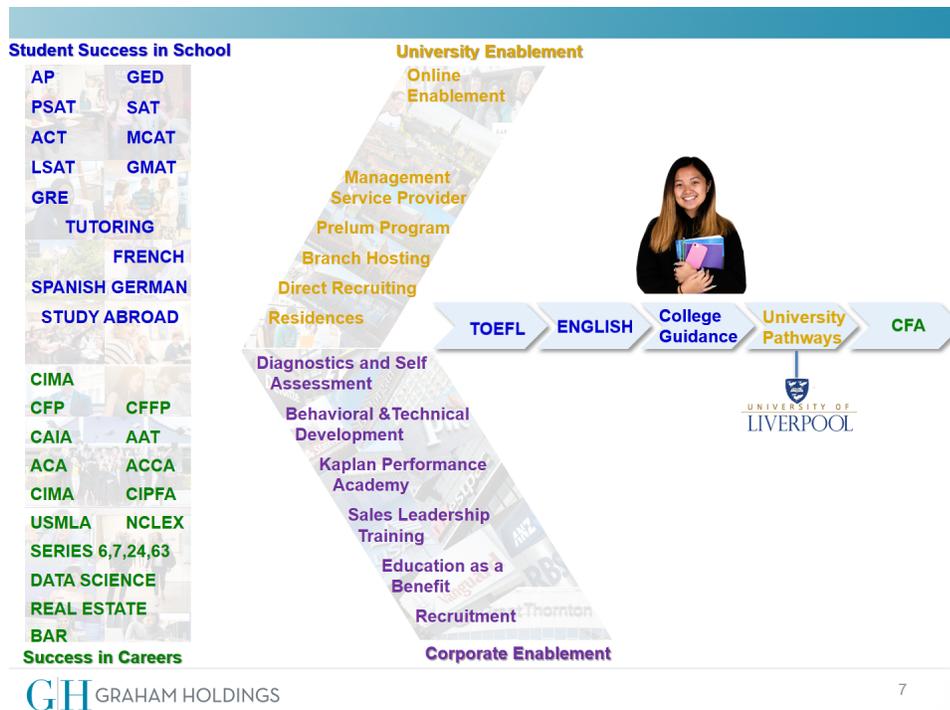
This includes helping businesses tap into university curricula, as well as offering Kaplan programs in licensure or certification, professional development, and online coaching.



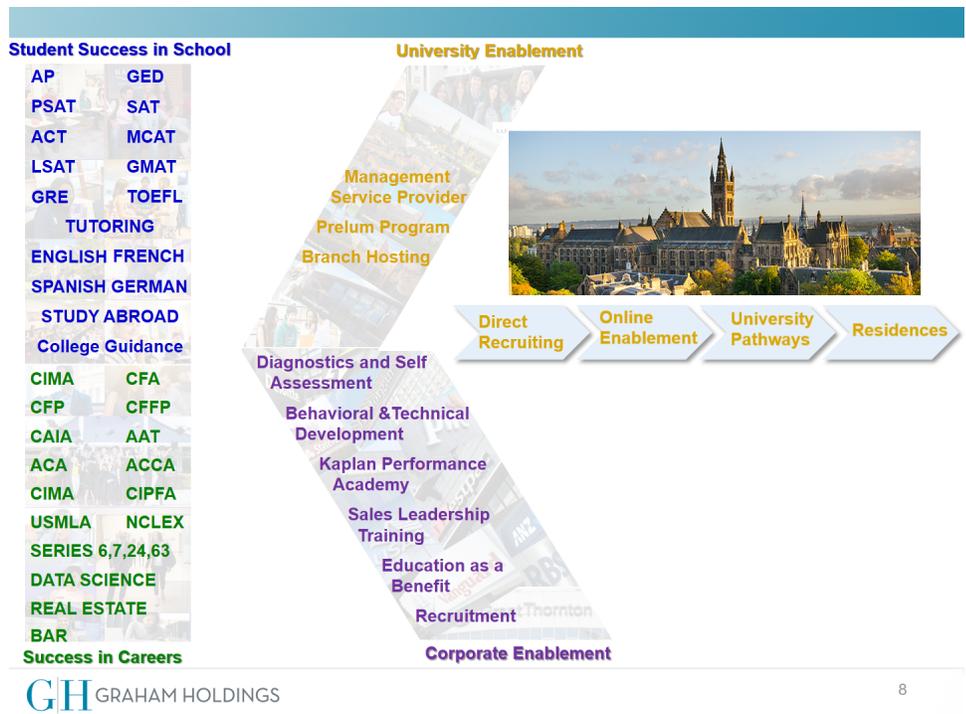
Kaplan, of course, has an exceptionally wide range of programs and services for students, universities and companies. To a large extent, our offerings have traditionally resided in separate units within the Kaplan portfolio. Over the last two years, however, we've made real progress in creating student and partner journeys that further our long-term relationships. So, for example. . .



- You can imagine we have a high school student, Elizabeth, from Chicago who comes to us for ACT prep; you can see that she might then come back to us for the GMAT for business school. We might then connect that student to our partner, Wake Forest University, for its online MBA program.



- Or, a Brazilian student, Carla, tests her English skills with a KITE exam (our English language assessment), attends one of our English language courses, then gets college guidance through our BridgeU service, which provides access to one of our UK Pathways programs, and this leads to a university degree program. Then she might decide to study with Kaplan for an accountancy qualification or the CFA as a government-supported apprentice.

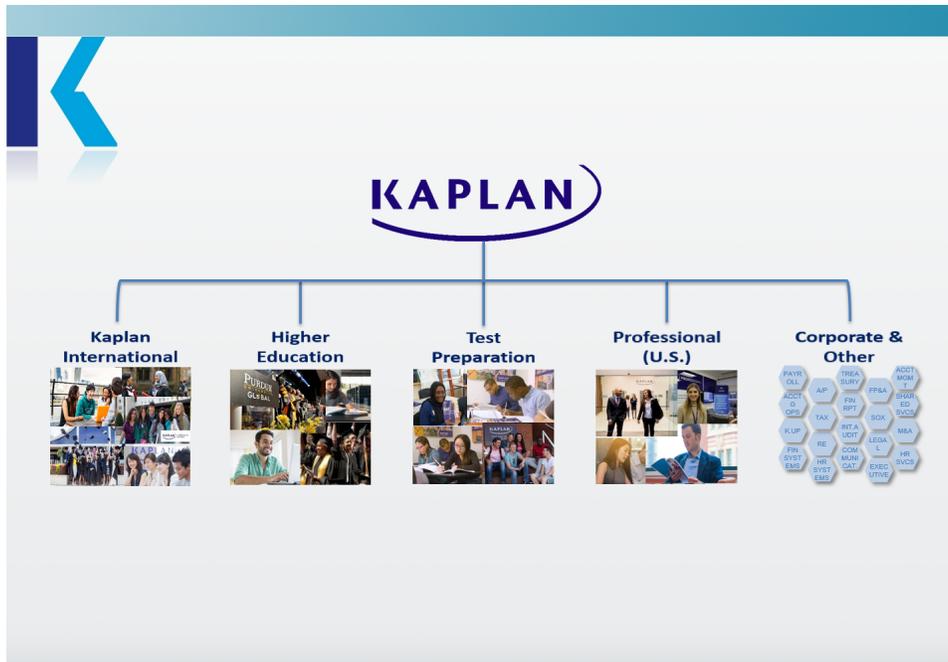


- For a university partner, we might offer international student recruiting, then help them build online courses, add a Pathways program, and to house those Pathways students, we'd develop an international student residence. At some point, the university may decide to extend their presence overseas, and we establish a branch campus for them in Singapore.

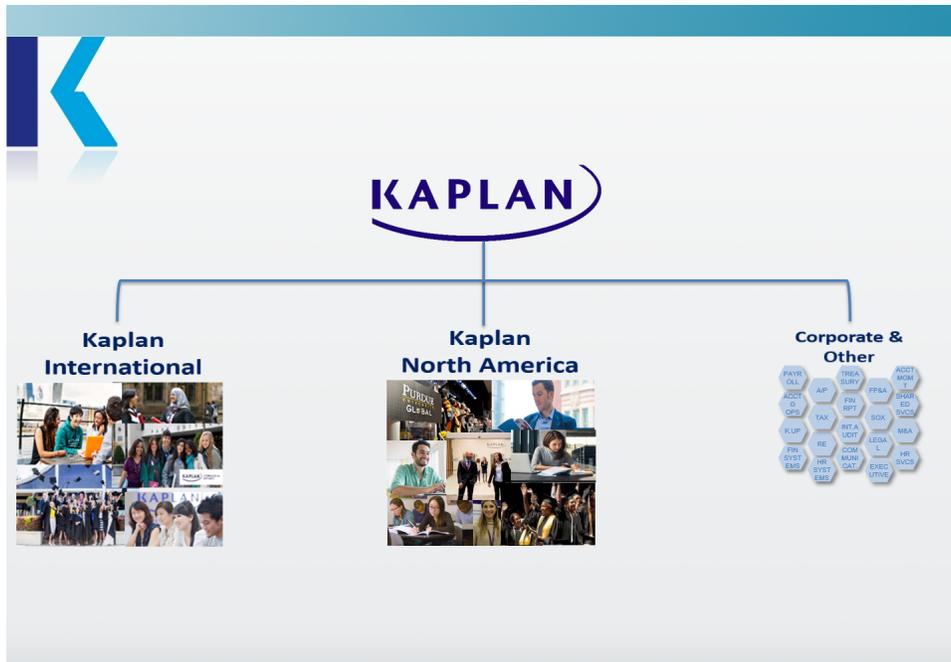


In essence, we can build upon our relationships by adding services from across the Kaplan portfolio. And we can do the same thing for corporate partners -- deliver licensure prep, courses from our university partners, professional development, and online coaching for employees. We might also help our partner recruit from our pool of students.

These examples highlight two distinct advantages: first, we have an enormous, global base of students who we can serve at multiple points throughout their learning journeys. Second, our deep relationships with universities and businesses enable us to create a holistic learning ecosystem connecting all three segments. Each segment supports the other.



Historically it's been harder than maybe it should be to offer these journeys, because offerings were dispersed among our four main business units, which operated fairly independently. Earlier this year we restructured the business, combining our three U.S.-based units into one broader division we call Kaplan North America.



That enables us to focus on building long-term relationships, and achieve significant cost savings. The consolidation should enable us not only to target our investments in areas most likely to lead to student outcome improvements, but also to improve the margin profile of our North American business. The new unit is overseen by Greg Marino, an outstanding, longtime Kaplan executive who was previously CEO of Kaplan Higher Education. He works with what I believe to be the best leadership team in the industry. Since we made the change over the summer, they've made tremendous progress.

With the new structure, we can avoid redundant expenses, and invest more in superior technology, marketing and educational delivery and support systems. We'll better leverage our broad student database, add new student relationships, and enhance student academic success and Lifetime Value by serving our population repeatedly throughout their educational journeys.

And we'll similarly build upon our relationships with universities and businesses, using our rich menu of offerings to help them excel at what they do.

We undertook some additional strategic moves in 2020 as well:

- We launched 25 online degree programs with universities including Purdue, Wake Forest, University of Essex and Liverpool University.
- We deepened our existing university relationships and added new partners such as Massey University in New Zealand, University of Newcastle in Australia, Queen Mary University in London, Birmingham University in the UK, and Simmons University in Boston.
- We formalized the digital-first business model for our U.S. exam prep businesses.
- We firmly established online program offerings in our international markets, in keeping with the rapid acceleration of online market acceptance.
- And we focused heavily on student support at Purdue Global where retention rates are up even as enrollment is growing.

Those moves should set us up for long-term growth, but it will be another year before we start to see the benefits, as COVID dampened student enrollment in some key areas. That's not just a 2020 issue; our enrollment carry-in to 2021 is lower, and enrollments will continue to be impacted until a vaccine is broadly administered. We have three primary areas impacted by COVID:



1. 29% of our revenue comes from students who travel from one country to another to study for language programs and higher education. International travel, of course, came to a virtual halt for most of 2020. That’s likely to continue into next year. In our Pathways programs, the majority of our students were willing to conduct their studies online. However, our language programs, in English, French and German, tend to attract students who are looking to have an exciting experience in a Western country for a month or two while learning the local language. That business remains frozen, leaving our language schools almost empty since the spring.
2. 28% of our revenue comes from students prepping for standardized tests. Because these tests are often run in large, on-site testing locations, many were paused for months. With

no tests to study for, students postponed their preparation. For those already enrolled with Kaplan, we extended our service at no additional cost.

3. And, of course, many of our programs have historically taken place in physical classrooms -- we entered the pandemic with 145 student locations around the world. All of them closed during the pandemic, though some have reopened. Fortunately, Kaplan is deeply experienced with online learning, and when we shifted our programs online, our students were highly enthusiastic about the sophisticated and engaging digital programming we were able to offer.

So what does all this mean, as far as our financial results?



Financial Results

Significant Covid-disruption losses at Languages

Nine Months Ended - Sep \$ millions	Revenue		Op Income ¹	
	2019	2020	2019	2020
Kaplan international	553	488	36	21
Higher education	238	244	10	22
Test preparation	192	154	9	(0)
Professional (U.S.)	110	100	21	13
Kaplan corporate and other	7	9	(19)	(11)
Intersegment elimination	(2)	(3)	(0)	0
Total	1,098	992	56	45

¹ Excludes amortization of intangible assets and impairment of long-lived assets-Non GAAP measure. See reconciliation at ghco.com.

Note: the sum of certain amounts may not equal the total due to rounding.

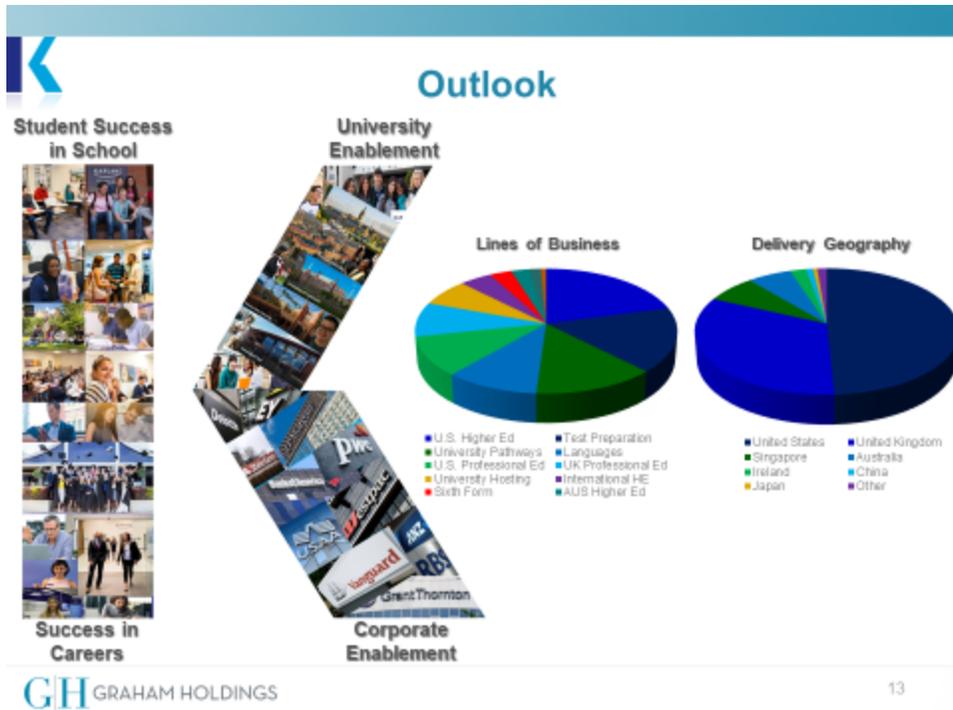
We've been able to mitigate much of the impact of the pandemic -- with the exception of one line of business: The Languages programs I mentioned.

Languages pivoted to online delivery, but given that these students seek the social and cultural experiences of living abroad, we could only make up so much ground. The shortfall in Languages represented more than the entirety of KI's and Kaplan's operating income decline for 2020. More specifically, we estimate the COVID disrupted losses for our Language business will be close to \$52 million in 2020. The rest of Kaplan International performed impressively under the circumstances. We anticipate Languages will make a rapid recovery when global travel returns -- particularly given that we've now created a more appealing cost structure going forward. We're seeing real strength, especially given the pandemic, in our Pathways business, our direct recruitment for universities, our Singapore-based branch campuses for

western universities, our global professional programs, and our higher and professional education programs in Australia. We have what we believe is the strongest student recruitment capabilities in the world for students interested in attending Western universities, with strong, trusted teams across the globe. So I very much like the profile of our International business.

In the U.S., Purdue Global saw significant growth. Enrollments were up by 15% and the student census rose to nearly 35,000 -- up from 28,000 at the time of the Kaplan University sale to Purdue. Student academic performance continues to improve, including retention and graduation rates. The profitability of Purdue Global and our ability to recognize our service fee grew correspondingly.

While our U.S. exam prep businesses were negatively impacted by canceled examinations, each remains a leader in its market. With the shift to delivery online, we enter 2021 with a lean, focused, digital model approach that should serve us well. As consumer preference has increasingly moved towards digital exam prep offerings – even before COVID – we’ve been focused on optimizing the balance between our center-based and digital delivery models. With COVID accelerated student movement toward digital preparation, we have sunsetted the majority of our center-based offerings and permanently shifted resources to our digital exam prep offerings.



We won't look back at 2020 with fondness. But we can look back on it with pride. Our teams responded swiftly and decisively to the COVID crisis, and in doing so protected our students, our partners, our shareholders and each other. They undertook a broad reorganization, cost-reduction effort, and strategic refocus that in combination should increase our earning power post-pandemic.

While one of our businesses could not escape a direct hit, Kaplan, as you can see, is a highly diversified organization in terms of the types of programs we offer, the customers we serve, and the geographies in which we operate. When one business is struggling, another is likely to be stronger... and that's the case here. Outside of our language business, our units outperformed our expectations under the circumstances. The pandemic will end, and when it

does, we may look back at 2020 as a year that helped set the table for a new era of growth for Kaplan.



Now, I will turn it over to Emily for an update on Broadcast.

Investor Day

December 3, 2020

Remarks by Emily L. Barr

Chief Executive Officer

Graham Media Group



GRAHAM MEDIA GROUP PROPERTIES

Over 8.3 million Television Households, 6.9% of US Households



Good Afternoon and thank you for the opportunity to provide you with an overview and update on Graham Media Group.

As a reminder, we are comprised of seven local media hubs covering just under 7% of the US - over 8.3 million households in primarily top 50 markets with Houston as our largest market at number eight and Roanoke our smallest at market number seventy-one. We operate three NBC affiliates in Houston, Detroit and Roanoke, one ABC affiliate in San Antonio, one CBS affiliate in Orlando and a fully local independent station plus a CW affiliate in Jacksonville. In addition, we own and operate Social News Desk, a SaaS-based company headquartered in Atlanta that currently serves over 2,500 television, newspaper and radio newsrooms world-wide making it easier and more efficient for them to write, edit, post and curate news on social media platforms. Also based in Detroit, Graham Digital oversees the digital, mobile and OTT strategy for all our properties and is considered a leader in the field of broadcast digital operations.

traditional demand for morning news and saw a surge in demand for midday and afternoon newscasts as people sought us out for any updates on COVID. Viewership and digital access soared in Q2 to levels we had not seen in almost a decade. While viewership has since normalized closer to pre-COVID levels, we have seen the make-up of our news audiences skew younger and the engagement among our digital audiences sustain a much higher level than pre-COVID days.

2020 OPERATING RESULTS

(\$ Millions)

	2019	2020	%
	Jan- Sept	Jan-Sept	Change
	<u>Actual</u>	<u>Actual</u>	
Total Revenue	\$340	\$350	3
Total Expense, Excluding Amortization of Intangible Assets	<u>219*</u>	<u>234*</u>	<u>7</u>
Operating Income before Amortization	\$121*	\$116*	(4)
Operating Cash Flow	\$131*	\$126*	(4)
Operating Margin	35.5%*	33.2%*	
Operating Cash Flow Margin	38.5%*	36.0%*	



GRAHAM
MEDIA
GROUP

*Non-GAAP measure – see reconciliation at ghco.com

3

Because we have three NBC affiliates, the loss of the summer Olympics combined with a difficult Q2 had a material impact on our revenue in Q3 and we delivered revenue somewhat below expectations, though still quite respectable given the circumstances. Excluding property, plant and equipment gains related to spectrum repacking, operating income before amortization increased in the first nine months of 2020.

GMG NET TV POLITICAL REVENUE

(\$ Thousands)



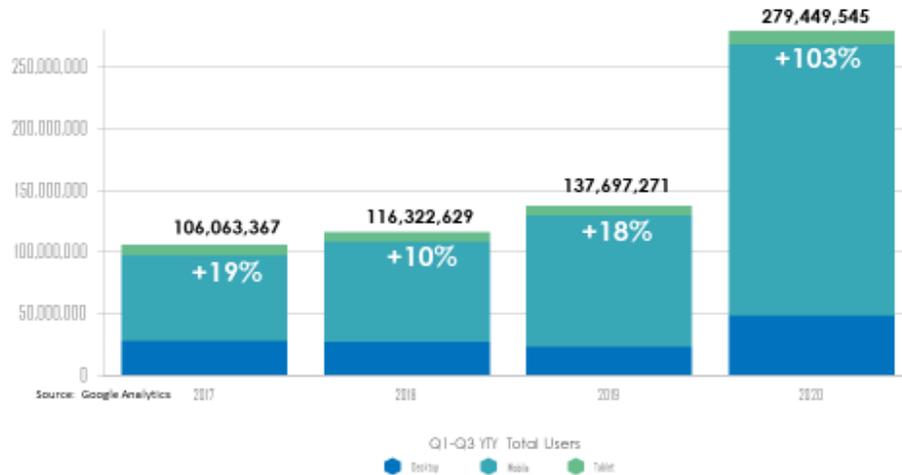
*Includes WSLs & WCWJ

4

That said, next to COVID, the single biggest impact on our revenue this year was, without a doubt, political advertising. While we saw robust spending in Q1 primarily from the Bloomberg campaign, it was in the middle of Q3 that we began to feel the full impact of political on our year. The figures shown here are through the November 3rd election and demonstrate the enormous impact political advertising has had on our business, particularly when considered over the past decade. Almost half of this advertising was placed in just one market –Detroit – where we were the beneficiaries of a hotly contested Senate seat, as well as several competitive Congressional seats; and, of course, the Presidential race in which Michigan was one of a handful of states that would determine the outcome of the election. Needless to say, we did not anticipate anything close to this amount of revenue pouring into our markets this year.

GMG DESKTOP/MOBILE TOTAL USERS

Q1 – Q3 Total Digital Audience Growth Year to Year

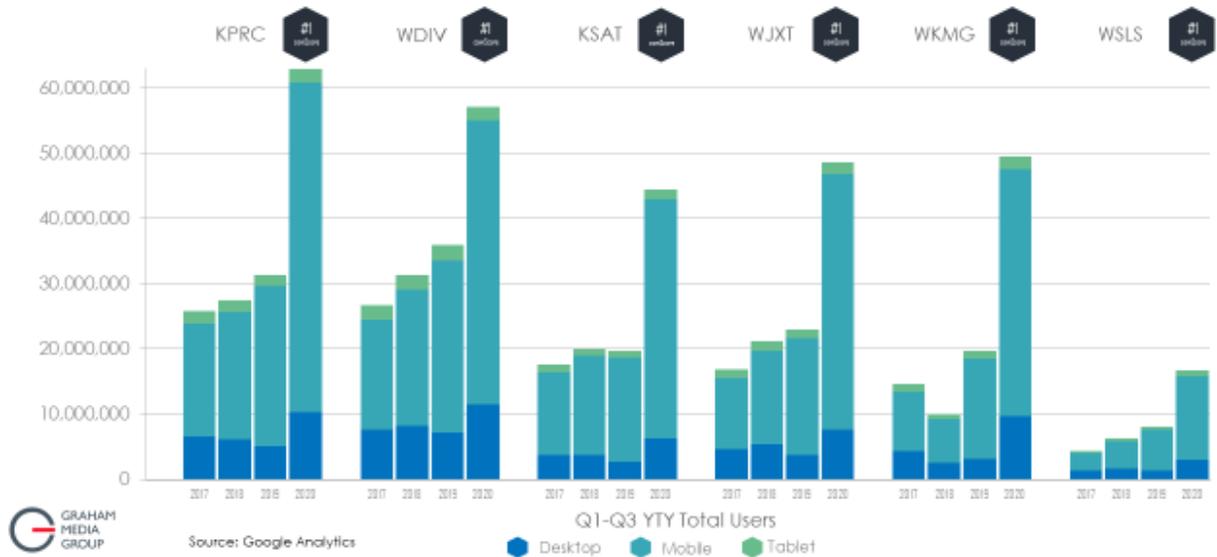


5

As mentioned earlier, we have been experiencing steady growth in our desktop and mobile usage and have been laser-focused on expanding this end of our business for many years now. From Q1-Q3 and largely due to the impact of COVID, we have seen well over a 100% increase in users with almost 280 million of them accessing us via desktop, mobile or tablet in the 9-month period.

GMG DIGITAL MARKET BREAKOUT

Q1 – Q3 Total Digital Audience Growth Year to Year by Market



Breaking this down by market, you can see that all our markets have experienced seismic growth in their digital audiences, and I am very pleased to report that each one of them is the number one source for local news in their respective regions beating out all other broadcast, newspaper and digital-only sites providing local news and information. We believe this is a critical strategy to maintaining and growing GMG into the future and we will continue to innovate and build in this space because our future depends on it.

GMG DIGITAL REVENUE

Year over Year, Q1 – Q3 2020 Revenue Growth

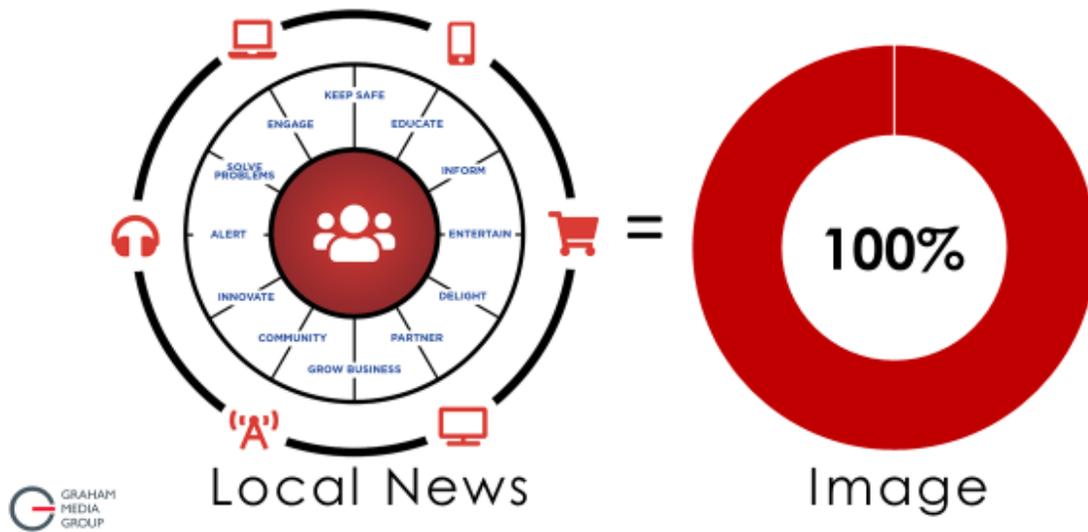
2020



7

As a result of increased usage, we have experienced a 13.2% growth in digital revenue through Q3 despite a substantial decline in Q2 from traditional advertisers who pulled back from both TV and Digital when the pandemic first appeared. For the first time, we also garnered some meaningful political advertising online as political ad agencies recognized the value of our local sites.

THE IMPORTANCE OF LOCAL NEWS



When we measure our value, it is critically important to recognize the impact of local news as it is the driver of all we do in creating and distributing local media in our markets. The sale of time inside local news and via digital delivery accounts for roughly 50% of our total advertising revenue. While we have important affiliations with various networks depending on the market, it is the branding and identity of our stations' local news operations that drives our image, reputation and business success. COVID and the recent election only served to underscore this critical point. As the news goes, so goes the station. To my point earlier, this is why we are so focused on being the number one source for local news digitally and why we are well positioned to succeed in the future.

MAJOR CATEGORIES

Q1-Q3 2020 Revenue by Category QTR to QTR Change

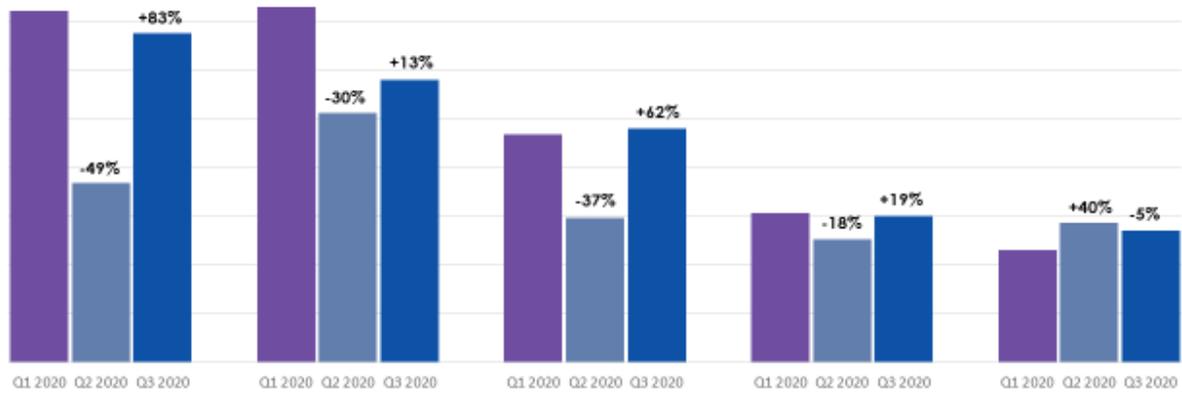
AUTOMOTIVE

PROFESSIONAL SERVICES

RETAIL

HEALTH & FITNESS

HOME PRODUCTS



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I wanted to share with you our top five categories just to demonstrate where we are today in terms of rebounding from Q2 and the COVID effect. As you can see here, Automotive has begun to bounce back closer to Q1 levels and to date, we are seeing a healthy amount of advertising from this sector in Q4.

Professional services – banking, financial services, and other professional services, dropped significantly in Q2 and is showing some increased strength as well. The overall economy and unemployment rates will drive the growth or retraction of this category into 2021.

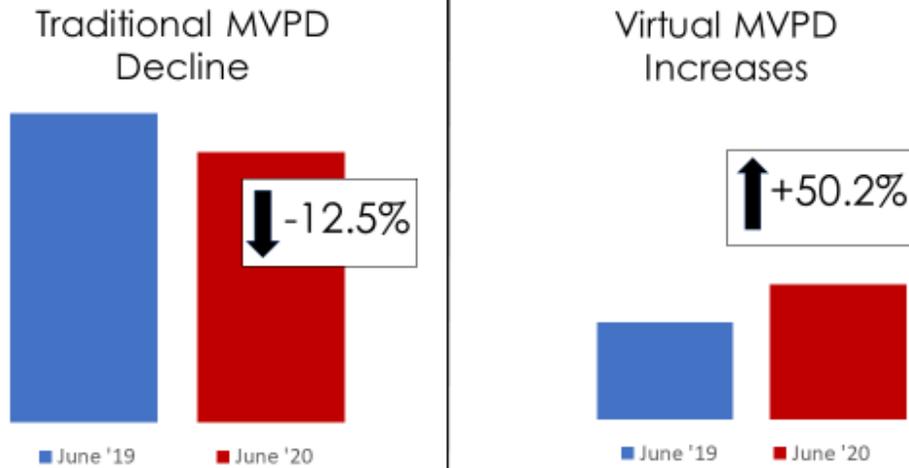
Retail was hard hit in Q2 as you would expect and is also starting to rebound though we are cautious here given the latest restrictions rolling across the country. We anticipate this could continue to be a volatile category for us in 2021.

Health and Fitness, along with Home Improvement were hurt less as people staying at home were a natural focus for these advertisers. We anticipate these categories will continue to grow into 2021.

I did not show you the restaurant category, which is not a top five earner for us, but suffice it to say, this category was devastated by the pandemic and is still figuring out when and how to advertise. I would like to add here that all our stations implemented free promotional advertising for their local mom and pop restaurants to support local businesses and help them stay afloat through the lockdowns.

RETRANSMISSION CONSENT FEES

Cord-cutting and Increased Streaming



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A significant piece of our revenue derives from the retransmission consent revenues we receive from cable, satellite and OTT providers. As cord cutting and streaming continue to increase, we have been able to grow our per subscriber rates, but we are watching the trends closely and expect retransmission revenue net of network fees to slow down in overall growth in the coming years. Revenue from OTT providers such as YouTube TV, Hulu and AT&T TV Now, just to name a few, has become a small but growing piece of the retransmission revenue pie.

THE LOSS OF LIVE SPORTS

Covid disrupts every major LIVE sporting event in 2020



2020 and COVID disrupted the live sports environment and negatively impacted advertising in major sporting events that were either curtailed, canceled or delayed. The NBA finals, NFL football, Hockey and Golf were all disrupted making it challenging for local advertisers who would otherwise have eagerly invested in these events. When football resumed in September, we did experience a resurgence in interest indicating that there remains a huge appetite for both viewing and advertising within live sports. Additionally, the cancellation of live sports likely contributed to the acceleration of cord cutting because one of the primary reasons viewers subscribe to cable and satellite is the opportunity to view live sports programming. The good news is, we will have the summer Olympics in 2021, as well as a more robust and predictable calendar of live sporting events that should engage sports fans and steer them back to broadcast television.

LARGE STATIONS IN IMPORTANT MARKETS

2020 Share of Total TV Market Political Spend

KPRC - HOUSTON

2020 Political Share – 24.1%

WDIV - DETROIT

2020 Political Share – 36.4%

WKMG - ORLANDO

2020 Political Share – 21.3%

KSAT – SAN ANTONIO

2020 Political Share – 36.0%

WJXT/WCWJ - JACKSONVILLE

2020 Political Share – 30.8%

WSLS - ROANOKE

2020 Political Share – 21.0%

2020 Broadcast Political Spend
in GMG Markets = \$270,138,260



Source: CMG Delta Analytica November 2020

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Because we operate in primarily large markets in key swing states, we were able to garner a significant share of the total political spend across all TV stations. The total dollars here represent what was spent on our stations and at our television competitors - the share by station and how much of the total political dollars we garnered in each of our markets. As you can see from the left-hand column, our powerhouse station in Detroit earned a whopping 36.4% of all TV political and that is directly attributable to its incredibly strong TV news ratings and web dominance. All GMG stations performed well and over-index their traditional advertising shares when it comes to political. Combine that with competitive races in Florida, Texas and Michigan and you can see why we wound up having such a strong year.

REVENUE PER STATION

Broadcast Cohort Q1-Q3 2020

(\$ Millions)



\$50.0

Per Station

meredith **\$34.6** / Station

TEGNA **\$31.7*** / Station

SCRIPPS **\$16.7** / Station

Nexstar **\$15.5**** / Station

gray **\$11.0** / Station

SBG **\$10.7** / Station



* Includes 2 Radio Stations

** Includes WGN America and 1 Radio Station

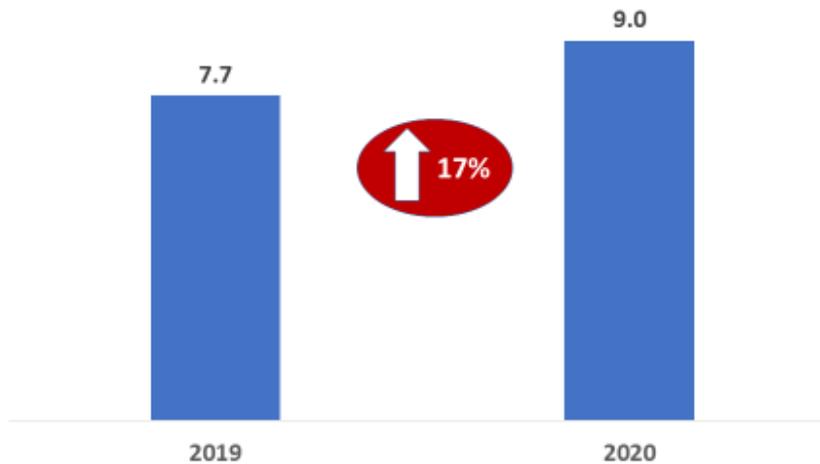
Another way to look at our positioning is to examine our average revenue per station against some of our peer companies. While we may operate seven stations in only six markets, we operate within larger markets and can do so very effectively and efficiently. Television stations have a relatively high fixed cost, but revenue increases exponentially as you consider market size. Many of our peers operate in much smaller markets where the opportunity to earn revenue is limited by market size and dynamics. They need a larger number of television stations to realize a similar amount of revenue to what we capture in fewer but larger overall markets.

LOCAL NEWS AUDIENCE GROWTH

Year to Year Average Weekly Reach January – September

Average Weekly Reach P18+ in Millions

6pm/Late News for KPRC, WDIV, WKMG, KSAT, WJXT



Source: Nielsen, Live+SD. Average Weekly Reach P18+, Jan-Sept 2019 vs. Jan-Sept 2020. Roanoke not included due to reporting constraints.

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Television news ratings and digital access across the GMG footprint remain strong and are a meaningful reflection of the critical role we played this year in informing, uplifting and celebrating our communities as we all struggled to grasp the enormity of the pandemic on every aspect of our lives. Local news has never been more relevant and remains a highly trusted and sought-after source of information for a large portion of the news-consuming public.



Thank you very much for your time today. I am happy to answer any questions you might have during the Q&A session. And with that, I will turn it over to Jake Maas.

Investor Day

December 3, 2020

Remarks by Jacob M. Maas

SVP-Planning and Development

Graham Holdings Company



GRAHAM HOLDINGS COMPANY – INVESTOR DAY MANUFACTURING SEGMENT

December 3, 2020



Good Afternoon. I am Jake Maas and I have been Senior Vice President of Planning and Development at Graham Holdings Company since 2015.

AGENDA

A	MANUFACTURING SEGMENT OVERVIEW	3
B	COMPANY PROFILES	6
C	2020 COVID IMPACT	11
D	CONCLUSION	13

Tim asked me to provide an overview of Graham Holdings' manufacturing segment. In addition to talking about the manufacturing segment in aggregate, I will also provide an overview of the businesses that make up this segment – Hoover Treated Wood Products, Dekko, Joyce and Forney. We think this is a great collection of businesses with deep moats and sustainable earning power, and I look forward to highlighting each respective business for you today. In Q2 of this year, Graham Holdings acquired Framebridge, which has a large manufacturing component to its business model. While Framebridge does not fall within our manufacturing segment for reporting purposes, given the manufacturing component to its business model, we thought investors would appreciate an overview of that business as well. I will conclude by providing an update on the impact we are seeing in each of these businesses as it relates to the COVID-19 pandemic.

MANUFACTURING SEGMENT OVERVIEW

- Durable businesses with models we understand
- Track record of sustained earning power that would continue under our ownership
- Great teams interested in continuing to run the businesses
- Re-investment opportunities
- Ability to acquire at a fair price that would create attractive cash on cash returns

Not long ago by Graham Holdings' standards – approximately seven years ago – we had no manufacturing segment whatsoever. So, I thought it might be useful to start from the beginning and explain our rationale for adding this segment. The logic was straightforward. We sought out, and ultimately found, businesses that we believed:

- 1) were durable business models that are easily understood;
- 2) had track records of sustained earning power that would continue under our ownership;
- 3) possessed great leadership teams that were interested in continuing with the business;
- 4) had attractive reinvestment opportunities that we believed would surface over time; and
- 5) were able to be acquired at a fair price that would create attractive cash on cash returns for our shareholders.

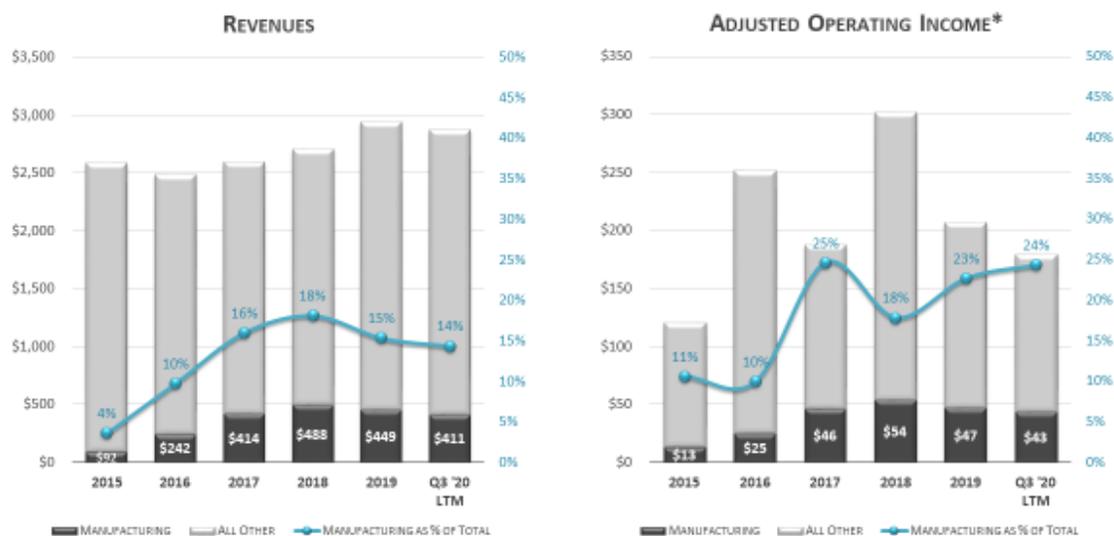
We are proud of the fact that in a relatively short period, we have been able to find businesses that met these criteria. We would love to find more businesses to layer into the segment, whether as bolt-on

opportunities to one of our existing manufacturing businesses or as new manufacturing platforms. That said, if we are unable to find good opportunities that meet our criteria, we are also perfectly happy to simply remain good stewards of our current businesses until the right opportunities surface.

MANUFACTURING SEGMENT CONTRIBUTION TO GHC

Manufacturing has been a significant contributor to both top and bottom lines

\$ in millions



Graham Holdings

Note: Amounts above reflect the Manufacturing Segment (excludes Framebridge)

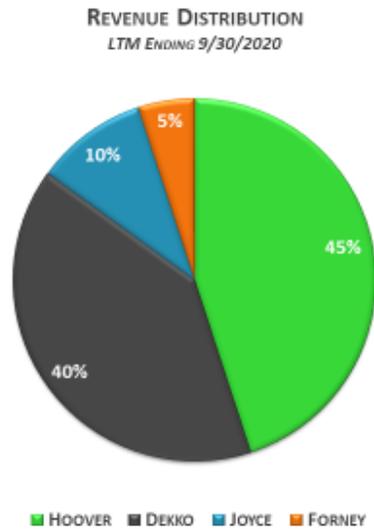
*Non-GAAP Measure. See reconciliation at gcho.com

The manufacturing segment made up \$411 million, or 14%, of the overall revenue generated by Graham Holdings in the last twelve months ended September 30, 2020. And while this segment has certainly been adversely impacted in 2020 by the COVID-19 pandemic (a topic I'll address later in this presentation), we were pleased that our manufacturing businesses were able to generate \$43 million, or nearly a quarter of our Adjusted Operating Income for the last twelve months ended September 30, 2020. Our manufacturing segment has clearly grown to be an important part of our business at Graham Holdings, improving the stability of our company overall and strengthening our long-term prospects.

MANUFACTURING SEGMENT CONTRIBUTION TO GHC

Manufacturing has been a significant contributor to both top and bottom lines

\$ in millions



As I mentioned, the manufacturing segment at Graham Holdings currently consists of four businesses: Hoover Treated Wood Products, Dekko, Joyce and Forney. In terms of relative size, you can see that Hoover made up 45% of the segment's revenue over the last twelve months, followed by Dekko at 40%, then Joyce at 10% and finally Forney at 5%. On average, the adjusted operating income margin profiles of these businesses on a combined basis are around 10%, a level that is understated by the fact that Hoover's revenue includes wood as a pass through cost. We are pleased that our manufacturing businesses have been able to maintain their margin profiles this year, and we are hopeful that as we scale these businesses we will see upside to those margin levels once we get to the other side of the pandemic.

HOOVER

KEY INVESTMENT MILESTONES	PRODUCTS
<ul style="list-style-type: none">▪ Founded in 1955▪ Acquired in 2017▪ Greenfield plant in Havana FL (2019)	<ul style="list-style-type: none">▪ Pressure-impregnated, kiln dried:<ul style="list-style-type: none">– Fire retardant wood products– Preservative Wood▪ Fire-retardant chemicals for distribution
END MARKETS	KEY MOATS / DIFFERENTIATORS
<ul style="list-style-type: none">▪ Wood constructed buildings<ul style="list-style-type: none">– Multi-family residences– Multi-tenant commercial buildings 	<ul style="list-style-type: none">▪ Mandated in local building codes▪ Vertical integration▪ National footprint▪ Category-defining brand



GH GRAHAM HOLDINGS 6

With that high-level overview of the manufacturing segment, I'd like to highlight each respective business, starting with Hoover, a business we acquired in 2017. In business since 1955, Hoover supplies pressure-impregnated kiln-dried lumber and plywood products for fire retardant and preservative applications. Hoover operates ten company-owned wood treating facilities located across the country that service a 100-plus member stocking distributor network that covers the U.S. and Canada. Last year, Hoover expanded its footprint by launching a new greenfield facility in Havana, FL. The primary end markets for Hoover's fire retardant wood products, which comprise over 80% of Hoover's revenue, are wood-constructed multi-family homes and commercial buildings. Essentially, any wood structure built in the U.S. that is larger than a single family home and/or has multiple tenants requires the use of fire retardant wood by local regulations and building codes. Hoover has several aspects to its business that we believe make it extremely durable, including the fact that it is the definitive market leader in the space and the only player that truly has a national footprint capable of serving larger national customers. It is also the only vertically integrated player with scale that both produces its own chemicals and manufactures wood products utilizing those chemicals. The result is that Hoover is the

low-cost supplier in the space, with a brand that is nearly synonymous with its key product.

Furthermore, Hoover's products make up a small portion of the overall cost of a project, but serve a mission critical role in the overall safety of the structure being built. The combination of these factors make Hoover a great business, with deep moats, that is operating in an attractive and protected end market.

DEKKO

KEY INVESTMENT MILESTONES

- Founded in 1952
- Acquired in 2015
- Bolt-on: ECA (2016), Furnlite (2018)
- New product launch: Lux Illuminaire



PRODUCTS

- Electrical power and data products
- Lighting fixtures
- Electrical assemblies and wire harnesses

END MARKETS

- Office furniture OEMs and dealers
- Hospitality
- Commercial real estate
- White goods & transportation



KEY MOATS / DIFFERENTIATORS

- Low-volume, high-mix, high-complexity
- Flexible U.S. / Mexico manufacturing footprint



DEKKO

Dekko, acquired by Graham Holdings in 2015, is a manufacturer of customized electrical equipment, including power and data solutions for installation in office workspaces, architectural lighting, and electrical components and assemblies. Under our ownership, Dekko completed two meaningful bolt-on acquisitions: ECA in 2016 and Furnlite in 2018 – both of which operate within Dekko’s power and data segment. In 2019, Dekko launched a new lighting brand – LUX Illuminaire – which has gained meaningful traction and has the potential to be a growth driver for the company over the coming years. The primary end markets for Dekko’s assortment of products include office furniture OEM’s (original equipment manufacturers) and dealers, hospitality, commercial real estate, white goods, transportation and durable medical equipment. Dekko focuses on manufacturing low-volume, high-mix, high-complexity products that are not easily commoditized by non-U.S. manufacturers. In addition, Dekko’s flexible manufacturing footprint with operations in both the U.S. and Mexico enable the company to efficiently and cost effectively meet the different needs of its customers. While the business has been more affected than our other manufacturing businesses by COVID-19 due to its exposure to the

commercial real estate and hospitality end markets, we believe the company is well positioned over the long run to continue to be a leader in its respective markets.

JOYCE

KEY INVESTMENT MILESTONES	PRODUCTS
<ul style="list-style-type: none">▪ Founded in 1873▪ Acquired by GHC in 2014▪ Bolt on acquisitions: Uni-lift (2019) UNI-LIFT	<ul style="list-style-type: none">▪ Screw jacks▪ Linear actuators  
END MARKETS	KEY MOATS / DIFFERENTIATORS
<ul style="list-style-type: none">▪ Highly diversified with heavier concentrations in the following industries<ul style="list-style-type: none">– Food industry equipment– Earthstation-communication antennas– Conveyor equipment	<ul style="list-style-type: none">▪ Quality / reputation▪ Proven technology that works▪ U.S. manufacturing footprint



GH GRAHAM HOLDINGS

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We acquired Joyce in 2014 and the business has been in continuous operations since 1873. In 2019, Joyce acquired Uni-lift, which had a complementary product line of screw jacks. Joyce has now integrated these product lines into its existing manufacturing facility in Portland, Indiana. Joyce's main product offerings consist of screw jacks and linear actuators. To put it simply, Joyce manufactures products that help their customers lift, position, and hold up to 250 tons for hundreds of applications around the globe. Joyce has a diversified set of end markets given the widespread utility of its products – but has somewhat heavier concentrations in food industry equipment, communication antennas, and conveyor equipment. One fun fact about Joyce is that they are still providing the same jacks to the Railroad and Mining Industries as they did when they were founded in 1873! That is not to say that Joyce has not had to innovate to better serve their customers -- a business cannot continuously operate for over a century without innovating -- but, it is also clear that the company benefits from a tried and true set of products that have, and we believe will continue to, stand the test of time. We see the key moats inherent within the Joyce business being the quality and reputation they have built up in their brand over many decades, the low degree of technology risk associated with their core products, and a

U.S. manufacturing footprint that is difficult to disrupt by non-U.S. competitors given the nature and scale of the products they produce domestically.

FORNEY

KEY INVESTMENT MILESTONES

- Founded in 1927
- Acquired in 2013
- Product expansion
 - Dampers
 - Turbine flame detectors

PRODUCTS

- Burners, igniters, dampers and controls
- After-market parts and service



END MARKETS

- Power utilities
 - Primarily domestic with some international projects in Asia/Europe/South America



KEY MOATS / DIFFERENTIATORS

- Proven technology within mission critical infrastructure
- Brand / high quality reputation built over decades
- Agency certifications



Forney was the first business we bought in the manufacturing sector in 2013. Forney has manufacturing operations in Mexico and produces four main products: burners, igniters, dampers and controls utilized in coal and natural gas power utilities. In addition, Forney provides after-market parts and services to its utility customers. For almost 100 years, Forney has provided safe and innovative combustion products and is helping the utilities to transition from coal to clean burning natural gas. Like Joyce, Forney's key moats include its stellar reputation for high quality products that go into one of toughest, most demanding environments one can imagine – power plants. Going forward, Forney is focused on accelerating its sales efforts around its higher margin products and services.

FRAMEBRIDGE

KEY INVESTMENT MILESTONES

- Founded in 2014
- Acquired in 2020
- First retail store launched in 2019

PRODUCTS

- Custom manufactured frames



END MARKETS

- Direct to consumer (“Take share, Make share”)
- Commercial



KEY MOATS / DIFFERENTIATORS

- Omni-channel strategy
- Centralized manufacturing; low cost supplier
- Technology layer to legacy space

FRAMEBRIDGE

live life
frame more

The last business I’d like to highlight is the most recent addition to Graham Holdings – Framebridge. Again, Framebridge does not fall within our manufacturing segment, but manufacturing is a key component to its model so we wanted to highlight the business today.

Framebridge is different from other acquisitions we have done in recent years and is an example of Graham Holdings being willing to suppress short-term profits for long-term gains. We did not acquire Framebridge because of its ability to generate profits in the short term, but rather out of the belief that ten years from now it could be the most popular way in the U.S. to custom-frame. Framebridge’s founder – Susan Tynan – founded the company with a simple goal – she thought the cost and hassle of framing objects at traditional custom-framing shops was too expensive, outdated and a poor customer experience. She thought there was a better way, and Framebridge is a manifestation of that vision.

Framebridge differentiates itself in three key ways:

- Framebridge has a unique operating model that leverages a centralized manufacturing strategy to gain economies of scale that allow them to have a lower-cost model relative to their competitors that do their framing on site at their retail locations.
- Framebridge has an omni-channel strategy with strong e-commerce capabilities enabled by their scale.
- Because Framebridge does not need to attach a framing workshop to their retail locations, they are well-positioned to create a more optimized retail footprint that meets their customers where they are – whether that is online or at well-trafficked retail locations.

The result is that Framebridge has created a new kind of framing experience that is modern, consumer-friendly, and less expensive, enabling them to not just take market share, but to grow the overall market by bringing new customers into the segment. While there are certainly complexities in the business, understanding the model for success is quite simple. Framebridge has two fixed cost structures: corporate costs and manufacturing. It needs to sell enough units to cover these two cost centers. The higher the gross profit per unit, the lower the number of units that need to be sold to achieve break-even and generate free cash flow. The company is not yet at the volume for break-even, but has a clear path forward with understandable unit economics. The value proposition is clear as well: it offers lower prices, more convenience, faster turnaround, and quality that is equal to or better than the competition. Thus, while Framebridge will require a significant amount of investment over the next few years before generating free cash flow, we believe the business is well positioned to scale and to become the category leader over the next decade. We are excited to be the new owners of Framebridge.

2020 YTD COVID IMPACT

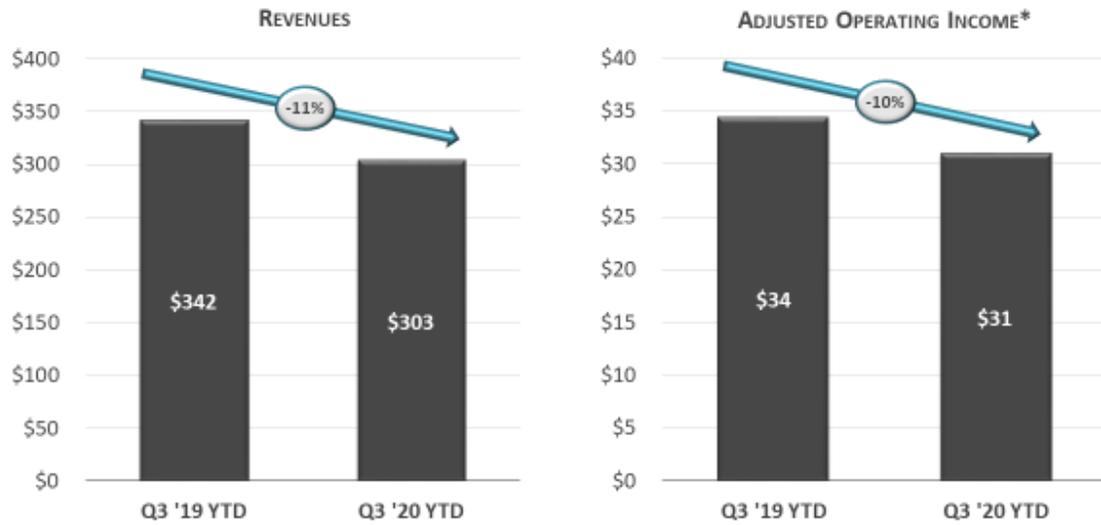
Company	End Market Impact
 HOOVER TREATED WOOD PRODUCTS, INC.	Low to Moderate 
 JOYCE	Low to Moderate 
 FORNEY	Moderate 
DEKKO	Moderate to High 
FRAMEBRIDGE	Online = Positive Retail = Moderate to High 

Before concluding, I want to provide a snapshot overview of how COVID-19 has impacted our manufacturing segment in 2020. Like Graham Holdings in general, our manufacturing segment is diversified with a wide variety of end markets. Thus, the impact of COVID-19 has varied at each of our businesses. The one thing that is consistent across all of our manufacturing businesses is that operating a manufacturing business in the middle of a pandemic is difficult. While remote work has become the new normal for many workers, the reality is that you cannot manufacture goods remotely. Thus, we are very proud of our leadership teams for putting the safety of our workers first and overhauling their operations to allow their facilities to continue to operate throughout the pandemic. That said, our operations have not been disruption free, and our teams remain vigilant as we continue to navigate a challenging environment. Make no mistake, we will do our very best to keep our facilities open and operational, but we will not compromise on worker safety in order to do so. In terms of our key end markets, the impact to our businesses have differed by company. For Joyce, Hoover and Forney, the impact to their end markets was relatively moderate. Combined, these three companies saw revenue decline only 1% for the first nine months of the year relative to 2019. While this seems minimal, we

believe our revenues would have grown in these businesses during the first nine months had the pandemic not developed. As mentioned previously, Dekko has seen their end markets more severely disrupted given their exposure to commercial real estate and hospitality. Dekko's topline saw a 24% decline in the first nine months of the year. Framebridge, on the other hand, has seen COVID boost its online sales, which currently comprises the majority of its revenue, as remote workers across the country have decided to utilize Framebridge's custom framing services to spruce up the walls of their new home offices with memorabilia, diplomas and children's artwork, just to name a few of the myriad of items the company frames each day. Its retail locations, which again make up a minority of its revenue, are all open for business but seeing reduced traffic as they mandate proper social distancing and other safety protocols within their locations. The good news on the retail front is that as the company looks for attractive new locations the real estate landscape has shifted in their favor.

2020 YTD COVID IMPACT

\$ in millions



Excluding Framebridge, on a comparative basis you can see that our manufacturing businesses are down year over year for the first nine months of the year by 11% on the topline and 10% on the bottom line. At the start of the year, pre-COVID, we would have considered this to be a disappointing result. On the other hand, in the middle of the nationwide lockdowns that were occurring in the spring, we would have looked at these results and considered them to be a great outcome through the first nine months of the year. From where we sit today, we are pleased these businesses have so far proven to be a durable earnings center for Graham Holdings even through a very difficult macroeconomic environment.

CONCLUSION

- Solid new leg of the stool
- Earning power remains strong
- Anticipate continued re-investment opportunities
- Excited about the long term prospects of Framebridge
- Opportunistically look to add another platform to the segment

In conclusion, the manufacturing segment is a solid new leg of the stool in terms of earnings diversification for Graham Holdings. While this segment has been adversely impacted by COVID-19, we believe the earning power of these businesses remains strong and durable over the long-term. Over the last five years, we've found good reinvestment opportunities within this segment both in the form of bolt-on opportunities and organic investments in expanded capacity and new products and services, and we anticipate being able to find additional attractive reinvestment opportunities within this segment over the coming years. We're excited to have added Framebridge to Graham Holdings as we believe it will prove to be a great long-term investment for our shareholders. Finally, we will continue to opportunistically look to add new companies to this segment to the extent we can find businesses that meet our acquisition criteria.

I'll now turn it back over to Tim.



GRAHAM HOLDINGS COMPANY – INVESTOR DAY

December 3, 2020

